

ABSTRACT OF THE DISCLOSURE

In order to provide ZnO system semiconductor devices having a stable p-type ZnO layer, a ZnO thin film is doped with nitrogen atoms having a high concentration. By fabricating the stable p-type ZnO layer, combinations with n-type ZnO layers easy of fabrication, or combinations with different compositions of p-type layers or n-type layers are made possible, thereby it enables to provide various configurations of ZnO system semiconductor devices.

A ZnO system semiconductor device according to the present invention is characterized in that in a semiconductor device comprising one or more layers of n-type layer and p-type layers respectively, at least one layer of said p-type layers is (are) formed of the Zn-polar ZnO system semiconductor film doped with nitrogen atoms such that the thin film growth direction of said Zn-polar ZnO system semiconductor film is conformed to the direction of Zn polarity (0001).

Fig. 3